

least one internucleotide linkage within said antisense oligonucleotide is not a phosphodiester or a phosphorothioate linkage, and

introducing the aerosolized antisense nucleic acid therapeutic or diagnostic composition into the lung of a mammal.

52. (Amended) A method of treating an animal having or suspected of having a disease or disorder that is treatable with an antisense nucleic acid composition comprising:

administering a therapeutically effective amount of an aerosolized antisense nucleic acid composition to the lung of the animal;

wherein the aerosolized antisense nucleic acid composition comprises at least one antisense oligonucleotide;

wherein the sugar moiety of at least one nucleoside unit of said antisense oligonucleotide is not a 2'-deoxyribofuranosyl sugar moiety or at least one internucleotide linkage within said antisense oligonucleotide is not a phosphodiester or a phosphorothioate linkage.

53. (Amended) A method of investigating the role of a gene or gene product in an animal other than a human comprising:

administering a therapeutically effective amount of an aerosolized antisense nucleic acid composition to the lung of the animal;

wherein the aerosolized antisense nucleic acid composition comprises at least one antisense oligonucleotide;

wherein the sugar moiety of at least one nucleoside unit of said antisense oligonucleotide is not a 2'-deoxyribofuranosyl sugar moiety or at least one internucleotide linkage within said antisense oligonucleotide is not a phosphodiester or a phosphorothioate linkage.

54. (Amended) A method for delivering an antisense nucleic acid therapeutic or diagnostic compound to the lung of an animal comprising applying to said lung a pharmaceutical composition comprising at least one antisense oligonucleotide wherein the sugar moiety of at least nucleoside unit of said antisense oligonucleotide is not a 2'-deoxyribofuranosyl sugar moiety or at least one internucleotide linkage within said antisense oligonucleotide is not a phosphodiester or a phosphorothioate linkage.

59. (Amended) A method of modulating the expression of a gene in an animal comprising administering to said animal an antisense nucleic acid composition comprising at least one antisense oligonucleotide wherein the sugar moiety of at least nucleoside unit of said antisense oligonucleotide is not a 2'-deoxyribofuranosyl sugar moiety or at least one internucleotide linkage within said antisense oligonucleotide is not a phosphodiester or a phosphorothioate linkage.

61. (Amended) A medical device for pulmonary delivery of an aerosol comprising an antisense nucleic acid composition for pulmonary delivery of an antisense oligonucleotide comprising at least one antisense oligonucleotide wherein the sugar moiety of at least nucleoside